

What is claimed is:

1. An optical test system for testing a device under test comprising:  
a fixture attached to an integrated circuit under test;  
an optical fiber held within said fixture and optically connected at its proximal end to a  
5 light source having a beam of light, wherein said optical fiber is held by said fixture in optical  
alignment with said device under test; and  
a focussing element optically coupled to said fiber, whereby said focussing element is  
configured to focus said beam of light onto a photosensitive target on said integrated circuit.
2. The optical test system of claim 1 wherein said fixture acts as a heat sink for said  
10 integrated circuit.
3. The optical test system of claim 1 wherein said light source is a laser.
4. The optical test system of claim 1 wherein said focussing element is a computer-  
generated holographic optical element (CG-HOE).
5. The optical test system of claim 1 wherein said focussing element is a zone-plate.
- 15 6. The optical test system of claim 1 wherein said focussing element is a lens.
7. The optical test system of claim 1 further comprising one or more lenses located in  
combination with said focussing element to focus said beam of light onto a photosensitive target  
on said integrated circuit.
8. A method of testing a device under test having an operating integrated circuit on a fixture  
20 comprising the acts of:  
inserting an optical fiber into a hole defined in said fixture;  
applying light from a light source to a proximal end of said fiber; and  
focussing said light as it exits a distal end of said fiber onto a photosensitive element of  
said integrated circuit thereby to cause latching of data into said integrated circuit.
- 25 9. The method of claim 8 further comprising the act of capturing light at a proximal end of  
said fiber reflected by said element.
10. The method of claim 8 where said fixture performs the function of a heat sink for said  
device under test.

11. The method of claim 9 further comprising the act of analyzing said reflected light for proper focusing of said light onto said element.

12. The method of claim 9 further comprising the act of analyzing said reflected light to determine whether said light is correctly coupled into said fiber.

5 13. An optical test system comprising:

a fixture for an integrated circuit under test;

an optical fiber housed within said fixture and optically connected at its proximal end to a light source;

10 a first lens located at a distal end of said tube thereby collimating a beam of light from said fiber; and

a second lens attached to said distal end of said tube and distal to said first lens, wherein said second lens focuses said light onto said integrated circuit and wherein said tube is adapted to extend through a hole defined in said fixture for said integrated circuit.

14. The optical test system of claim 13 wherein said first lens is a collimating lens.

15 15. The optical test system of claim 13 wherein said second lens is an immersion lens.

16. An electrical article of manufacture comprising:

a semiconductor substrate having a proximal surface and a distal surface;

one or more interconnecting contacts and associated photosensitive elements on said distal surface of said substrate;

20 one or more optical focussing elements in contact with said proximal surface of said substrate and each in alignment with one of said photosensitive elements; and

a fixture in contact with said optical focussing elements.

17. The electrical article of manufacture of claim 16 wherein said optical focussing element is a CG-HOE.

25 18. The electrical article of manufacture of claim 16 wherein said optical focussing element is a zone-plate.

19. The electrical article of manufacture of claim 16 wherein said optical focussing element is a lens.